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APPLICATION FOR LETTERS PATENT

**Method and Apparatus for Creating and Playing
Soundtracks in a Gaming System**

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8 **TECHNICAL FIELD**

9 This invention relates to gaming systems and, more particularly, to the
10 creation of soundtracks using a gaming system and to the playback of soundtracks
11 using a gaming system.

12
13 **BACKGROUND**

14 Gaming systems currently available on the market are capable of playing
15 game discs, music CDs, and movie DVDs from a disc drive. For example, the
16 Playstation® 2 gaming system from Sony Corporation provides the ability to play
17 games, music, and video titles from a disc inserted in the console. Certain gaming
18 systems also provide a modem or other mechanism for establishing an online
19 connection to facilitate online gaming.

20 Current gaming systems play games that typically include a game
21 soundtrack. The game soundtrack is stored on a disc along with the game (i.e., a
22 game disc). This game soundtrack includes music that is created by or selected by
23 the game developer. If the user of the gaming system dislikes the game
24 soundtrack or grows tired of the same soundtrack being played repeatedly, some
25 gaming systems allow the user to launch the game from the game disc, and then

1 replace the game disc with an audio CD that is played by the gaming system while
2 the game is executed. However, if the game requires additional information from
3 the game disc (e.g., when changing from one level to another), the user must
4 remove the audio CD and re-insert the game disc. After the additional information
5 has been retrieved from the game disc, the game disc can be removed from the
6 gaming system and replaced with the audio CD. This switching of discs disrupts
7 the gaming experience and is a nuisance to the user.

8 The system and method described herein addresses these limitations by
9 providing a mechanism to create soundtracks in a gaming system and to select a
10 soundtrack to be played while executing a particular game.
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13 SUMMARY

14 The method and apparatus described herein provide the ability to create,
15 edit, and play soundtracks in a gaming system. The soundtracks include one or
16 more audio tracks copied or retrieved from one or more audio sources (such as an
17 audio CD, an audio DVD, a game disc, or an online source containing audio files).
18 Soundtracks are stored on a hard disk drive in the gaming system and can be
19 played back through the gaming system. Additionally, soundtracks stored in the
20 gaming system can be associated with a particular game such that the soundtrack
21 is played (instead of the game's default soundtrack) while the game executes. This
22 system allows the user to choose or create a soundtrack based on the user's audio
23 preferences, and does not limit the user to the game soundtrack provided by the
24 game developer.
25

1 In the described implementation, the gaming system includes a game
2 console and one or more controllers. The game console is equipped with a hard
3 disk drive, a portable media drive, and broadband connectivity. A console
4 application stored on the hard disk drive is loaded when the game console is
5 powered on. The console application presents a menu hierarchy that includes
6 various soundtrack creation and soundtrack selection menus. The soundtrack
7 creation menu allows the user to select various audio tracks to be included in a
8 soundtrack. The soundtrack selection menu allows the user to select a soundtrack
9 for playback or for associating with a particular game such that the soundtrack is
10 played when the particular game is launched.

11 When a game is launched, the gaming system determines whether the
12 launched game has a user-associated soundtrack. If so, the user-associated
13 soundtrack is retrieved from the hard disk drive and played while the game is
14 executed. If the launched game does not have a user-associated soundtrack, the
15 gaming system either 1) plays the default game soundtrack provided by the game
16 developer; or 2) allows the user to select the soundtrack to be played while the
17 game is executed. The user of the gaming system can change soundtracks in the
18 middle of a game by pausing the game and selecting a different soundtrack. The
19 gaming system then resumes execution of the game and begins playing the newly
20 selected soundtrack.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates a gaming system that implements a uniform media portal architecture.

Fig. 2 is a block diagram of the gaming system.

Fig. 3 illustrates a network gaming system in which the Fig. 1 gaming system is connected via a network to other consoles and services.

Fig. 4 illustrates a navigation hierarchy employed by the gaming system.

Fig. 5 illustrates a graphical user interface depicting the main menu of the gaming system.

Fig. 6 is a flow diagram of the main menu navigation process that is performed after the gaming system is initialized.

Fig. 7 illustrates a graphical user interface depicting a music collection menu that is accessible from the main menu.

Fig. 8 illustrates a graphical user interface depicting a music player that is accessible from the music collection menu.

Fig. 9 illustrates a graphical user interface depicting a screen display used to select an existing soundtrack or create a new soundtrack.

Fig. 10 illustrates the creation of a soundtrack using a variety of different audio sources.

Fig. 11 is a flow diagram illustrating a process for creating a new soundtrack.

Fig. 12 illustrates a graphical user interface depicting a screen displayed during the creation of a soundtrack.

Fig. 13 is a flow diagram illustrating a process that determines which soundtrack to play when a particular game is launched.

DETAILED DESCRIPTION

The method and apparatus discussed herein allows users to create and play soundtracks in a gaming system. A soundtrack can be played by itself or played at the same time a game is executed, thereby replacing the soundtrack provided with the game. The soundtrack is created by copying audio data (or audio tracks) from one or more audio sources and storing the audio data as a soundtrack on a hard disk drive. The audio sources may include audio CDs, audio DVDs, game discs, and online sources that contain music files available for download. Since the soundtrack is played from the hard disk drive, it is not necessary to remove the game disc or other media from the gaming system prior to playing the soundtrack.

Fig. 1 shows an exemplary gaming system 100. It includes a game console 102 and up to four controllers, as represented by controllers 104(1) and 104(2). The game console 102 is equipped with an internal hard disk drive and a portable media drive 106 that supports various forms of portable storage media as represented by optical storage disc 108. Examples of suitable portable storage media include DVD, CD-ROM, game discs, and so forth.

The game console 102 has four slots 110 on its front face to support up to four controllers 104, although the number and arrangement of slots may be modified. A power button 112 and an eject button 114 are also positioned on the front face of the game console 102. The power button 112 switches power to the game console and the eject button 114 alternately opens and closes a tray of the portable media drive 106 to allow insertion and extraction of the storage disc 108.

The game console 102 connects to a television or other display (not shown) via A/V interfacing cables 120. A power cable 122 provides power to the game console. The game console 102 may further be configured with broadband

1 capabilities, as represented by the cable or modem connector 124 to facilitate
2 access to a network, such as the Internet.

3 Each controller 104 is coupled to the game console 102 via a wire or
4 wireless interface. In the illustrated implementation, the controllers are USB
5 (Universal Serial Bus) compatible and are connected to the console 102 via serial
6 cables 130. The controller 102 may be equipped with any of a wide variety of
7 user interaction mechanisms. As illustrated in Fig. 1, each controller 104 is
8 equipped with two thumbsticks 132(1) and 132(2), a D-pad 134, buttons 136, and
9 two triggers 138. These mechanisms are merely representative, and other known
10 gaming mechanisms may be substituted for or added to those shown in Fig. 1.

11 A memory unit (MU) 140 may be inserted into the controller 104 to
12 provide additional and portable storage. Portable memory units enable users to
13 store game parameters and port them for play on other consoles. In the described
14 implementation, each controller 104 is configured to accommodate two memory
15 units 140, although more or less than two units may be employed in other
16 implementations.

17 The gaming system 100 is capable of playing, for example, games, music,
18 and videos. With the different storage offerings, titles can be played from the hard
19 disk drive or the portable medium 108 in drive 106, from an online source, or from
20 a memory unit 140. A sample of what the gaming system 100 is capable of
21 playing back include:

- 22
23 1. Game titles played from CD and DVD, from the hard disk drive, or
24 from an online source.
25

2. Digital music played from a CD in the portable media drive 106, from a file on the hard disk drive (e.g., Windows Media Audio (WMA) format), or from online streaming sources.
3. Digital audio/video played from a DVD disc in the portable media drive 106, from a file on the hard disk drive (e.g., Active Streaming Format), or from online streaming sources.

Fig. 2 shows functional components of the gaming system 100 in more detail. The game console 102 has a central processing unit (CPU) 200 and a memory controller 202 that facilitates processor access to various types of memory, including a flash ROM (Read Only Memory) 204, a RAM (Random Access Memory) 206, a hard disk drive 208, and the portable media drive 106. The CPU 200 is equipped with a level 1 cache 210 and a level 2 cache 212 to temporarily store data and hence reduce the number of memory access cycles, thereby improving processing speed and throughput.

The CPU 200, memory controller 202, and various memory devices are interconnected via one or more buses, including serial and parallel buses, a memory bus, a peripheral bus, and a processor or local bus using any of a variety of bus architectures. By way of example, such architectures can include an Industry Standard Architecture (ISA) bus, a Micro Channel Architecture (MCA) bus, an Enhanced ISA (EISA) bus, a Video Electronics Standards Association (VESA) local bus, and a Peripheral Component Interconnects (PCI) bus, also known as a Mezzanine bus.

As one suitable implementation, the CPU 200, memory controller 202, ROM 204, and RAM 206 are integrated onto a common module 214. In this

1 implementation, ROM 204 is configured as a flash ROM that is connected to the
2 memory controller 202 via a PCI (Peripheral Component Interconnect) bus and a
3 ROM bus (neither of which are shown). RAM 206 is configured as multiple DDR
4 SDRAM (Double Data Rate Synchronous Dynamic RAM) that are independently
5 controlled by the memory controller 202 via separate buses (not shown). The hard
6 disk drive 208 and portable media drive 106 are connected to the memory
7 controller via the PCI bus and an ATA (AT Attachment) bus 216.

8 A 3D graphics processing unit 220 and a video encoder 222 form a video
9 processing pipeline for high speed and high resolution graphics processing. Data
10 is carried from the graphics processing unit 220 to the video encoder 222 via a
11 digital video bus (not shown). An audio processing unit 224 and an audio codec
12 (coder/decoder) 226 form a corresponding audio processing pipeline with high
13 fidelity and stereo processing. Audio data is carried between the audio processing
14 unit 224 and the audio codec 226 via a communication link (not shown). The
15 video and audio processing pipelines output data to an A/V (audio/video) port 228
16 for transmission to the television or other display. In the illustrated
17 implementation, the video and audio processing components 220-228 are mounted
18 on the module 214.

19 Also implemented on the module 214 are a USB host controller 230 and a
20 network interface 232. The USB host controller 230 is coupled to the CPU 200
21 and the memory controller 202 via a bus (e.g., PCI bus) and serves as host for the
22 peripheral controllers 104(1)-104(4). The network interface 232 provides access
23 to a network (e.g., Internet, home network, etc.) and may be any of a wide variety
24 of various wired or wireless interface components including an Ethernet card, a
25 modem, a Bluetooth module, a cable modem, and the like.

1 The game console 102 has two dual controller support subassemblies
2 240(1) and 240(2), with each subassembly supporting two game controllers
3 104(1)-104(4). A front panel I/O subassembly 242 supports the functionality of
4 the power button 112 and the eject button 114, as well as any LEDs (light emitting
5 diodes) or other indicators exposed on the outer surface of the game console. The
6 subassemblies 240(1), 240(2), and 242 are coupled to the module 214 via one or
7 more cable assemblies 244.

8 Eight memory units 140(1)-140(8) are illustrated as being connectable to
9 the four controllers 104(1)-104(4), i.e., two memory units for each controller.
10 Each memory unit 140 offers additional storage on which games, game
11 parameters, and other data may be stored. When inserted into a controller, the
12 memory unit 140 can be accessed by the memory controller 202.

13 A system power supply module 250 provides power to the components of
14 the gaming system 100. A fan 252 cools the circuitry within the game console
15 102.

16 The game console 102 implements a uniform media portal model that
17 provides a consistent user interface and navigation hierarchy to move users
18 through various entertainment areas. The portal model offers a convenient way to
19 access content from multiple different media types—game data, audio data, and
20 video data—regardless of the media type inserted into the portable media drive
21 106.

22 To implement the uniform media portal model, a console user interface (UI)
23 application 260 is stored on the hard disk drive 208. When the game console is
24 powered on, various portions of the console application 260 are loaded into RAM
25 206 and/or caches 210, 212 and executed on the CPU 200. The console

1 application 260 presents a graphical user interface that provides a consistent user
2 experience when navigating to different media types available on the game
3 console.

4 The gaming system 100 may be operated as a standalone system by simply
5 connecting the system to a television or other display. In this standalone mode,
6 the gaming system 100 allows one or more players to play games, watch movies,
7 or listen to music. However, with the integration of broadband connectivity made
8 available through the network interface 232, the gaming system 100 may further
9 be operated as a participant in a larger network gaming community.

10 Fig. 3 shows an exemplary network gaming environment 300 that
11 interconnects multiple gaming systems 100(1), ..., 100(g) via a network 302. The
12 network 302 represents any of a wide variety of data communications networks. It
13 may include public portions (e.g., the Internet) as well as private portions (e.g., a
14 residential Local Area Network (LAN)), as well as combinations of public and
15 private portions. Network 302 may be implemented using any one or more of a
16 wide variety of conventional communications media including both wired and
17 wireless media. Any of a wide variety of communications protocols can be used
18 to communicate data via network 302, including both public and proprietary
19 protocols. Examples of such protocols include TCP/IP, IPX/SPX, NetBEUI, etc.

20 In addition to gaming systems 100, one or more online services 304(1), ...,
21 304(s) may be accessible via the network 302 to provide various services for the
22 participants, such as hosting online games, serving downloadable music or video
23 files, hosting gaming competitions, serving streaming audio/video files, and the
24 like. The network gaming environment 300 may further involve a key distribution
25 center 306 that plays a role in authenticating individual players and/or gaming

1 systems 100 to one another as well as online services 304. The distribution center
2 306 distributes keys and service tickets to valid participants that may then be used
3 to form games amongst multiple players or to purchase services from the online
4 services 304.

5 The network gaming environment 300 introduces another memory source
6 available to individual gaming systems 100 – online storage. In addition to the
7 portable storage medium 108, the hard disk drive 208, and the memory unit(s)
8 140, the gaming system 100(1) can also access data files available at remote
9 storage locations via the network 302, as exemplified by remote storage 308 at
10 online service 304(s).

11 Fig. 4 shows the uniform media portal model 400. It provides a main menu
12 402 that acts as a common interface for multiple media types, including game
13 media, movie media, and music media. The main menu 402 presents the user with
14 a set of navigation choices that accurately describe what they would like to
15 interact with on their console. This top-level menu is a simple representation of
16 the three primary entertainment areas available on the console, thus presenting the
17 following choices:

- 18
- 19 • Games: This entertainment area pertains to a user's game experience
20 and gaming media.
- 21 • Music: This entertainment area is dedicated to the music context and
22 audio media.
- 23 • Movies: This entertainment area relates to a user's movie experience
24 and video media.
- 25

1 The model's navigation hierarchy follows the media theme. Beneath the
2 main menu 402 are collections of titles that pertain to their particular media types
3 currently available to the user. In this example, a user can navigate from the main
4 menu 402 to a games collection 404 that lists currently available game titles.
5 Navigation may also be made to a music collection 406 that groups available
6 music titles and a movie collection 408 that groups available movie titles. By
7 constructing the hierarchy in terms of media type, the user is intuitively presented
8 with titles within any given entertainment area. The titles within the various areas
9 may be stored in any one of many storage locations, but such detail is not
10 immediately revealed. Thus, the uniform media portal model 400 offers a
11 coherent way to access multiple media types regardless of the media type inserted
12 into the gaming system's portable media drive.

13 Area specific features, such as high scores on a game or creating a
14 soundtrack, are left for lower levels of the model 400. Thus, beneath each
15 collection is the specific play area that pertains to the particular media experience.
16 A games play area 410 is navigated through the games collection 404, a music
17 play area 412 is accessed through the music collection 406, and a movies play area
18 414 is navigated through the movie collection 408. This organization of the model
19 allows users to select the context of the media type. This model thus provides a
20 high-level "filter" on the kinds of media available on the console, and what
21 operations may be performed with respect to the media.

22 The model 400 also accommodates system areas, including a memory area
23 416 and a settings area 418. The memory area 416 allows users to view memory
24 contents and manage the memory devices in the console. The settings area 418
25

1 allows users to preview currently set options, as well as adjust the settings as
2 desired.

3 The console application 260, which implements the uniform media portal
4 model 400, is stored in the hard disk drive 208 of the console 102. The console
5 application 260 is loaded each time the console is powered on. When power is
6 initially applied and before presenting the main menu or loading a title, the
7 console application 260 runs through an initialization cycle.

8 Fig. 5 illustrates an exemplary graphical user interface 500 depicting the
9 main menu of the gaming system. The main menu UI 500 is generated by the
10 console UI application 260 and depicted on the television or other display. The
11 main menu UI 500 contains the five menu elements: a games element 502, a music
12 element 504, a movies element 506, a memory element 508, and a setting element
13 510. These elements provide the navigation entry points for the five level-one
14 areas of the uniform media portal model 400, namely, the games collection 404,
15 the music collection 406, the movie collection 408, the memory 416, and the
16 settings 418. Environmental background audio may be played when entering the
17 main menu to further enhance the user environment.

18 The focus on the main menu UI 500 is initially placed on the games
19 element 502, but other default positions may be alternatively employed. Any of
20 the four controllers 104(1)-104(4) may be used to navigate the console user
21 interface. The main menu is navigated from left to right with any of the connected
22 controller thumbsticks. "D-pad" and left analog thumbstick actions are treated the
23 same. The console UI application 260 recognizes all button presses and
24 thumbstick movements from every controller 104, so moves from multiple
25 thumbsticks simultaneously may result in a "tug-of-war" navigation. In one

1 implementation, the navigation does not wrap once the user has reached the far left
2 or right extent of the main menu UI 500, thus attempting to move right once the
3 user has reached the settings element 510 or to move left once the user has reached
4 the games element 502 will have no effect.

5 A select element 512 allows the user to select the focused element from
6 among the five main menu elements 502-510. The "A" button on the controller is
7 used to control the select element 512, and hence the graphical select element 512
8 illustrates an "a" within the element. Upon selection, the console UI application
9 navigates to the selected area.

10 Fig. 6 is a flow diagram of the main menu navigation process 600 that is
11 performed after the gaming system is initialized. The process 600 is implemented
12 in software as computer-executable instructions that are executed by the CPU 200
13 to perform the operations illustrated as blocks. The process generally discerns
14 which main menu element is selected and navigates to the selected area.

15 At block 602, the console application 260 determines whether the games
16 element 502 is selected. If so (i.e., the "Yes" branch from block 602), the console
17 application 260 navigates to the games collection 404 and presents a games
18 collection menu (block 604). If the games element is not selected, block 606
19 determines whether the music element 504 is selected. If the music element 504 is
20 selected, the console UI application 260 navigates to the music collection 406 and
21 presents a music collection menu (block 608). As discussed below, the music
22 collection menu includes options to create, edit, and play soundtracks through the
23 gaming system.

24 If the movies element 506 is selected (block 610), the console UI
25 application 260 navigates to the movies collection 408 and presents a movie player

(block 612). If the memory element 508 is selected (block 614), the console UI application 260 navigates to the memory area 416 and presents a memory collection menu (block 616). Finally, if the settings element 510 is selected (block 618), the console UI application 260 navigates to the settings area 418 and presents a settings collection menu (block 620).

Fig. 7 illustrates a graphical user interface depicting a music collection menu 700 that is presented upon selection of the music element 504 in the main menu UI 500 (Fig. 5). The music collection is the area where the user can select from available audio discs in the portable media drive 106 as well as soundtracks they have previously created and stored on the hard disk drive 208. The music collection menu 700 includes a list 702 of the available audio discs in the portable media drive (if any) and soundtrack files on the hard disk drive. An example of a suitable audio disc is a Redbook audio CD (compact disc). An example of a suitable soundtrack file is one or more WMA files copied from an audio CD, an audio DVD, a game disc, an online source, or other audio source.

An orb 704 contains a graphic of the currently selected audio item and a metatext panel 706 posts information about the current audio element. As the user navigates over the list 702 of the available audio discs and soundtracks, corresponding summary information is posted in the metadata panel 706. The following information is displayed for the currently selected audio disc or soundtrack:

- Name of the audio element as it appears in the list
- Total number of tracks
- Total playing time for the audio element in minutes and seconds

1
2 In this example, the audio CD is highlighted in list 702 and hence a CD
3 image is presented in orb 704. As indicated by the metatext panel 706, the audio
4 CD is the 14-track album "Earthling" by David Bowie. When network access is
5 available, artist and other information (such as track titles and release date) can be
6 retrieved from online services over the Internet at any time.

7 Descriptive text 708 (i.e., "n items") is positioned beside the main legend
8 "Music Collection" to indicate the number of titles in the music collection. The
9 list 702 displays a limited number of music titles (e.g., eight titles). When a user
10 first enters the music collection after purchasing their console, there will be zero
11 titles in the music collection (i.e., "0 items"). In this situation, the music
12 collection menu 700 is bypassed and the user is navigated to the music player
13 screen (shown and described below with respect to Fig. 8). The title of the music
14 player screen is "no audio CD" and all of the playback buttons in the area are
15 disabled. The user may only navigate back to the main menu 500 (Fig. 5).

16 If the user only has a single audio disc in the portable media drive, or a
17 single soundtrack in the music collection, the user is automatically navigated past
18 the music collection menu 700 when coming from the main menu and is taken
19 directly to the music player screen. As the user creates multiple soundtracks and
20 stores them in the hard disk drive, the music collection menu 700 is no longer
21 bypassed, but instead presents the available soundtracks in the list 702. When the
22 descriptive text 708 indicates that there are more music titles than shown on list
23 702 (e.g., $n > 8$), up/down scroll arrows are added to the list 702 to represent that
24 more titles are available.
25

1 The user can move among music titles in list 702 by using the up and down
2 directions of the thumbstick, or some other pre-defined control mechanism. The
3 list 702 may be configured to wrap or not wrap when the user reaches the top or
4 the bottom of the list. A select element 710 enables user selection of the
5 highlighted title from list 702 using the "A" button on the controller. Selection of
6 a game title navigates the user to the music player menu. A back element 712
7 facilitates navigation back to the main menu UI 500 by pressing the "B" button on
8 the controller.

9 Fig. 8 illustrates a graphical user interface depicting an exemplary music
10 player 800 that is accessible from the music collection menu or, where no music
11 titles are listed, upon loading a music disc. The music player allows the user to
12 play back the current audio disc in the portable media drive 106 or previously
13 created soundtracks. The music player 800 includes a track list 802 of the
14 available audio tracks and corresponding track lengths, an orb 804 that contains a
15 radial spectrum analyzer (or other music related visual), and a status element 806
16 that displays the current playback status and timeline of the current track. During
17 audio playback, the current track being played within the track list 802 is
18 highlighted. The status element 806 renders the following information for the
19 user:

- 20
- 21 • Current time within the current track
- 22 • Visual progress bar for the current track
- 23 • Simple playback icons to denote playback status (e.g., play, pause, stop,
- 24 repeat, random)
- 25

1 A transport control panel 812 is displayed along the bottom of the music
2 player for playback control. An example control panel 812 includes a play/pause
3 button, a stop button, a skip forward button, a skip back button, a random track
4 selection button, and a repeat button. When the user first navigates into the music
5 player from the main menu or the music collection, the play button in the transport
6 control panel 812 is in focus by default. Buttons on the game controller 104 may
7 be mapped to the transport control buttons. For example, a white button on the
8 controller might be mapped to the play/pause toggle button, the black controller
9 button might be mapped to the stop button, the left trigger might be mapped to the
10 previous track button, and the Right trigger might be mapped to the next track
11 button.

12 A "copy song" button 816 is also displayed in the music player UI 800.
13 When the copy song button 816 is selected, the user is navigated into the
14 soundtrack creation tool with the current audio disc or soundtrack as the source.
15 The soundtrack creation tool allows one or more tracks to be copied to a
16 soundtrack. The soundtrack creation tool is discussed in greater detail below.

17 A select element 808 enables user selection of the highlighted audio track
18 from list 802 using the "A" button on the controller. A back element 810
19 facilitates navigation back to the previous menu by pressing the "B" button on the
20 controller.

21 Fig. 9 illustrates a graphical user interface depicting a example screen
22 display 900 used to select an existing soundtrack or create a new soundtrack. As
23 noted above, users can create their own soundtracks by copying audio tracks from
24 one or more audio sources. Screen display 900 provides users with a list 902 of all
25 soundtracks available to the gaming system. Such soundtracks may be stored on

1 the hard disk drive 208, a portable disc medium 108 in drive 106, a memory unit
2 140, or at remote storage 308 at an online source 304. If the user has created at
3 least one soundtrack, the list 902 depicts one or more placards of available
4 soundtracks. A user entered name, or a default name "soundtrack 1", "soundtrack
5 2", etc., is shown on the placards.

6 A "New Soundtrack" button 904 is positioned beside the list to enable the
7 user to create a new soundtrack. Upon selection of a soundtrack in the list 902 or
8 the "New Soundtrack" button 904, the user is navigated to a track selection screen
9 described below with respect to Fig. 12. If the user has not yet created a
10 soundtrack, the list 902 of available soundtracks is empty. Upon choosing the
11 "New Soundtrack" button 904, the user is presented with an area for text entry and
12 a virtual keyboard for typing a new name for the soundtrack. By default, the name
13 given to the soundtrack will be "Soundtrack 1", but any keyboard input from the
14 user will replace this default title with the entered name.

15 Fig. 10 illustrates the creation of a soundtrack using a variety of different
16 audio sources. A new soundtrack 1002 is created by selecting audio tracks from
17 one or more different audio sources. Exemplary audio sources illustrated in Fig.
18 10 include audio CDs 1004 and 1006, game discs 1008 and 1010, WMA files 1012
19 and 1014, and audio DVDs 1016 and 1018. Although a limited number of audio
20 sources are illustrated in Fig. 10, soundtrack 1002 can be created using audio
21 tracks from any number of audio sources that represent any number of artists. The
22 audio tracks that comprise soundtrack 1002 can be arranged in any order,
23 regardless of the audio source or the time at which the audio track was retrieved or
24 copied.
25

1 Audio CDs 1004 and 1006 typically include multiple audio tracks.
2 Soundtrack 1002 may contain one or more audio tracks from one or more audio
3 CDs. Game discs 1008 and 1010 may contain one or more audio tracks that are
4 played during the game. One or more of those audio tracks may be included in the
5 user-created soundtrack 1002. WMA files 1012 and 1014 may be stored locally
6 on the hard disk drive or available from an online source. Each WMA file may
7 contain one or more audio tracks. One or more audio tracks from one or more
8 WMA files may be included in soundtrack 1002. Additionally, one or more
9 MPEG Layer 3 (MP3) audio files (not shown) may be included in soundtrack
10 1002. MP3 files may be stored locally on the hard disk drive or available from an
11 online source. Audio DVDs 1016 and 1018 typically include multiple audio
12 tracks. Soundtrack 1002 may include one or more audio tracks from one or more
13 audio DVDs.

14 Fig. 11 is a flow diagram illustrating a process 1100 for creating a new
15 soundtrack. The process 1100 is implemented in software as computer-executable
16 instructions that are executed by the CPU 200 to perform the operations illustrated
17 as blocks. Initially, the gaming system 100 creates a new soundtrack file to
18 receive the selected audio tracks (block 1102). The user is given the opportunity
19 to name the soundtrack. If the user does not provide a name, a default name
20 "Soundtrack n" is applied to the soundtrack. The default name can later be
21 changed by the user.

22 At block 1104, the console application 260 presents a list of audio sources
23 from which to retrieve or copy audio tracks. Next, the user selects an audio source
24 from the list of audio sources (block 1106). The console application 260 then
25 presents a list of audio tracks available from the selected audio source (block

1 1108). The user then selects one or more audio tracks from the list to include in
2 the soundtrack (block 1110). At block 1112, the console application 260 retrieves
3 the selected audio tracks and adds the audio tracks to the soundtrack. If necessary,
4 the console application 260 converts the retrieved audio files into WMA format.
5 For example, audio tracks from an audio CD or an audio DVD are converted from
6 their native format into WMA format prior to adding the audio tracks to the
7 soundtrack. Similarly, MP3 files are converted from MP3 format to WMA format
8 before adding the audio tracks to the soundtrack.

9 At block 1114, the console application 260 determines whether more audio
10 tracks are to be added to the soundtrack. This determination is performed, for
11 example, by querying the user as to whether they want to add more tracks. If
12 additional tracks are to be added to the soundtrack, the process 1100 returns to
13 block 1104, where the user is presented with a list of audio sources. Alternatively,
14 the process 1100 may return to block 1106, which allows the user to select another
15 audio track from the same audio source as the previous selection.

16 After all audio tracks have been added to the soundtrack, the process 1100
17 returns to the music collection menu (block 1116) shown in Fig. 7. At this point,
18 the music collection menu displays the newly created soundtrack in the list of
19 available soundtracks.

20 Each user of a game console 102 can have their soundtracks stored
21 separately from the soundtracks created by other console users. For example,
22 when a user completes the creation of a new soundtrack, the soundtrack is stored
23 in an area on the hard disk drive associated with that user or a user attribute is
24 stored with the soundtrack indicating the creator of the soundtrack. Thus, when a
25

1 particular user identifies themselves to the game console, the game console
2 displays the soundtracks created by that particular user.

3 Fig. 12 illustrates a graphical user interface depicting an exemplary audio
4 track selection screen 1200 displayed during the creation of a soundtrack. Audio
5 track selection screen 1200 includes a list 1202 of available audio tracks (e.g.,
6 from an audio disc or an online source), and a corresponding list 1204 of audio
7 tracks that are already in the soundtrack. The user then selects a single audio
8 track, or multiple tracks, to be included in the soundtrack. The screen 1200 also
9 depicts a status area 1208 that identifies the progress of the total operation. The
10 ordering of the audio tracks in list 1204 can be adjusted by dragging a particular
11 audio track to the desired location in the list and releasing the audio track. The list
12 1204 is then reordered to reflect the new location of the audio track.

13 A particular implementation of the audio track selection screen may include
14 a "name soundtrack" button that allows the user to assign a name to the
15 soundtrack. The name can be entered using a virtual keyboard or other character
16 input mechanism. The audio track selection screen may also include a delete
17 button that allows the user to delete a particular song from the soundtrack.

18 After the soundtrack is completed, a select element 1206 is activated by the
19 using the "A" button on the controller. This select element causes the system to
20 navigate back to the music collection menu. A back element 1210 facilitates
21 navigation back to the previous menu by pressing the "B" button on the controller.

22 If the user cancels a file copy operation, those audio files being copied or
23 retrieved will be lost. If a power off occurs while creating a soundtrack, any audio
24 files being copied or retrieved will not be included in the soundtrack.
25

1 In a particular implementation, soundtracks are stored as one or more
2 WMA files on the gaming system 100. Specifically, WMA files for soundtracks
3 are stored in a flat directory on the hard disk drive 208. This directory also
4 contains a text data file that maintains a reference of all WMA files, as well as the
5 soundtracks to which each WMA file belongs. Because the game console
6 manages the soundtrack directory, it is possible to keep this data file up to date.
7 An API (application program interface) may be used to allow a game to query
8 such information as the list of available soundtracks, the first audio file of a
9 specific soundtrack, the last audio file of a specific soundtrack, and the next audio
10 file in a specific soundtrack.

11 Fig. 13 is a flow diagram illustrating a process 1300 that determines which
12 soundtrack to play when a particular game is launched. The process 1300 is
13 implemented in software as computer-executable instructions that are executed by
14 the CPU 200 to perform the operations illustrated as blocks. When a user plays a
15 game, the user can choose to listen to the game's default soundtrack or listen to a
16 different soundtrack. If the user becomes tired of the game's default soundtrack,
17 the user can create a new soundtrack and associate that soundtrack with the game
18 title such that the new soundtrack is played when the game is launched instead of
19 the game's default soundtrack. This new soundtrack is referred to as a "user-
20 associated soundtrack."

21 The process 1300 begins when a user selects a game to play (block 1302).
22 The game may be selected, for example, by inserting a game disc in the portable
23 media drive 106, by selecting a game from list of games stored on the hard disk
24 drive 108, or by selecting a game from an online source. The console application
25 260 determines whether the selected game has a user-associated soundtrack (block

1 1304). If the selected game has a user-associated soundtrack, the game is
2 launched and the user-associated soundtrack is played during the execution of the
3 game (block 1306).

4 If the selected game does not have a user-associated soundtrack, the
5 console application 260 presents the user with an option to select a soundtrack or
6 play the game using the default soundtrack (block 1308). Next, the console
7 application 260 determines whether the user selected a soundtrack or the default
8 soundtrack (block 1310). If the user selects the default game soundtrack, the game
9 is launched and the default game soundtrack is played during the execution of the
10 game (block 1312). If the user selects to choose a soundtrack, the user is
11 presented with the available soundtracks stored on the gaming system (block
12 1314). The game is then launched and the selected soundtrack is played during the
13 execution of the game (block 1316).

14 When the user selects a soundtrack to play instead of the default
15 soundtrack, the user is presented with the option of making the soundtrack change
16 "permanent." If the change is made permanent, the selected soundtrack will be
17 played instead of the default soundtrack each time the game is played. Thus, the
18 user is not required to select the new soundtrack each time the game is played –
19 the system will remember the new soundtrack until the user specifically changes
20 the soundtrack or specifically requests the gaming console to begin using the
21 default game soundtrack.

22 Since the soundtrack is played from the hard disk drive, the playback of the
23 soundtrack does not interfere with the execution of the game from the game disc.
24 The game disc remains in the game console while the soundtrack executes,
25 thereby eliminating the game disruptions that would occur if the game disc was

1 removed and replaced with an audio CD. The user can change soundtracks in the
2 middle of a game by pausing the game and selecting a different soundtrack. The
3 game is then "un-paused" and game play continues at the point where the game
4 was previously paused. The new soundtrack is played back from the hard disk
5 drive while the game executes from the game disc.

6 Although the invention has been described in language specific to structural
7 features and/or methodological acts, it is to be understood that the invention
8 defined in the appended claims is not necessarily limited to the specific features or
9 acts described. Rather, the specific features and acts are disclosed as exemplary
10 forms of implementing the claimed invention.